

QV

FEDERAL COOPERATION TREASURY

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

| | |
|---|--|
| Date of mailing (day/month/year) 08 March 2000 (08.03.00) | To: Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ÉTATS-UNIS D'AMÉRIQUE |
| International application No. PCT/GB99/02106 | Applicant's or agent's file reference 39487 |
| International filing date (day/month/year) 02 July 1999 (02.07.99) | Priority date (day/month/year) 02 July 1998 (02.07.98) |
| Applicant FISHER, Tim et al | |

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

02 February 2000 (02.02.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Olivia RANAIVOJAONA Telephone No.: (41-22) 338.83.38 |
|---|---|

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
REDDIE & GROSE
 Attn. Marlow, N. S.
 16, Theobalds Road
 London WC1X 8PL
 UNITED KINGDOM

✓
NT

NOTIFICATION OF TRANSMITTAL OF
 THE INTERNATIONAL SEARCH REPORT
 OR THE DECLARATION

2 months

26.1.00

(PCT Rule 44.1)

RIWP

Date of mailing
 (day/month/year)

26/11/1999

Applicant's or agent's file reference

39487

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/GB 99/ 02106

International filing date

02/07/1999

Applicant

MARS UK LIMITED et al.

1. The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority

 European Patent Office, P.B. 5818 Patentlaan 2
 NL-2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Maurizio Amodeo



NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|---|
| Applicant's or agent's file reference 39487 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 99/02106 | International filing date (day/month/year) 02/07/1999 | (Earliest) Priority Date (day/month/year) 02/07/1998 |
| Applicant MARS UK LIMITED et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. Certain claims were found unsearchable (See Box I).

3. Unity of invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. _____

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23J3/12 A23K1/04 A23J3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23J A23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | OORD A H A VAN DEN ET AL: "Decolouration of slaughterhouse blood by treatment with hydrogen peroxide" ABSTRACTS AND COMMUNICATIONS. EUROPEAN MEETING OF MEAT RESEARCH WORKERS, 1 January 1979 (1979-01-01), page 827/828 XP002081374 the whole document --- | 1-8 |
| A | ANTOLA A ET AL: "TOLERANCE TO TRANSIENT FAULTS IN MICROPROGRAMMED CONTROL UNITS" IEEE TRANSACTIONS ON RELIABILITY, vol. 39, no. 5, 1 December 1990 (1990-12-01), pages 535-546, XP000208707 ISSN: 0018-9529 the whole document --- | 1-8 -/- |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

25 October 1999

26/11/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

De Jong, E

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| A | DATABASE WPI Section Ch, Week 197724 Derwent Publications Ltd., London, GB; Class D12, AN 1977-42665Y XP002120044 & JP 52 018775 B (FUJI OIL CO LTD), 24 May 1977 (1977-05-24) abstract --- | 1-8 |
| A | FR 2 315 858 A (ANVAR) 28 January 1977 (1977-01-28) claims 1,2 --- | 1-8 |
| X | WO 97 02760 A (NESTLE SA) 30 January 1997 (1997-01-30) | 9-11 |
| A | the whole document --- | 1-8 |
| X | DD 142 144 A (KUMMER SIEGFRIED; LCHAGWAA GURRAGTSCHAGIJN; RAEUBER HANS JOERG) 11 June 1980 (1980-06-11) | 9-11 |
| A | the whole document --- | 1-8 |
| A | DATABASE FSTA 'Online! INTERNATIONAL FOOD INFORMATION SERVICE (IFIS), FRANFURT/MAIN, DE FAJVISEVSKIJ M L ET AL: "Extrusion technology of processing and utilization of slaughterhouse blood." Database accession no. 94-1-07-s0026 XP002120043 abstract & TEHNOLOGIJA MESA, vol. 34, no. 2/3, 1993, pages 58-60, VNIIMP, Moscow, Russia --- | 1-8 |
| A | US 4 293 576 A (SENTANCE CHRISTOPHER B) 6 October 1981 (1981-10-06) the whole document --- | 1-8 |
| A | DATABASE WPI Section Ch, Derwent Publications Ltd., London, GB; Class D13, AN 1971-71383S XP002120045 & SU 289 804 A (UKRAINIAN MEAT AND MILK I) abstract ----- | 1-8 |

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|--|---|------------------|-------------------------|--|------------------|
| JP 52018775 | B | 22-07-1974 | JP 973546 C | | 28-09-1979 |
| | | | JP 49075761 A | | 22-07-1974 |
| FR 2315858 | A | 28-01-1977 | NONE | | |
| WO 9702760 | A | 30-01-1997 | AU 701156 B | | 21-01-1999 |
| | | | AU 6656196 A | | 10-02-1997 |
| | | | CA 2222714 A | | 30-01-1997 |
| | | | EP 0837637 A | | 29-04-1998 |
| DD 142144 | A | 11-06-1980 | NONE | | |
| US 4293576 | A | 06-10-1981 | AT 368685 B | | 25-10-1982 |
| | | | AT 595778 A | | 15-03-1982 |
| | | | AU 527766 B | | 24-03-1983 |
| | | | AU 3892678 A | | 21-02-1980 |
| | | | BE 869744 A | | 14-02-1979 |
| | | | CA 1120309 A | | 23-03-1982 |
| | | | CH 643987 A | | 13-07-1984 |
| | | | DE 2835516 A | | 22-02-1979 |
| | | | DK 355178 A | | 16-02-1979 |
| | | | FR 2400328 A | | 16-03-1979 |
| | | | GB 2002218 A, B | | 21-02-1979 |
| | | | IE 47168 B | | 11-01-1984 |
| | | | IT 1097948 B | | 31-08-1985 |
| | | | JP 54049881 A | | 19-04-1979 |
| | | | NL 7808449 A | | 19-02-1979 |
| | | | SE 7808613 A | | 16-02-1979 |
| SU 289804 | A | | NONE | | |

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Marlow, N. S.
REDDIE & GROSE
16, Theobalds Road
London WC1X 8PL
GRANDE BRETAGNE

File at Cambridge

NT

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

RI

Date of mailing
(day/month/year) 03.10.2000

Applicant's or agent's file reference
39487/NT

IMPORTANT NOTIFICATION

| | | |
|---|--|--|
| International application No. PCT/GB99/02106 | International filing date (day/month/year) 02/07/1999 | Priority date (day/month/year) 02/07/1998 |
|---|--|--|

Applicant
MARS UK LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized officer

Cardenas, C

Tel. +31 70 340-3370





PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|--|---|
| Applicant's or agent's file reference 39487/NT | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/GB99/02106 | International filing date (day/month/year) 02/07/1999 | Priority date (day/month/year) 02/07/1998 |
| International Patent Classification (IPC) or national classification and IPC A23J3/12 | | |
| Applicant MARS UK LIMITED et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|--|---|
| Date of submission of the demand 02/02/2000 | Date of completion of this report 03.10.2000 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | Authorized officer Ainscow, J Telephone No. +31 70 340 3886 |



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/02106

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-5 as originally filed

Claims, No.:

1-11 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

the description, pages:
 the claims, Nos.:
 the drawings, sheets:

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/02106

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|------|-------------|
| Novelty (N) | Yes: | Claims 1-8 |
| | No: | Claims 9-11 |
| Inventive step (IS) | Yes: | Claims 1-8 |
| | No: | Claims 9-11 |
| Industrial applicability (IA) | Yes: | Claims 1-11 |
| | No: | Claims |

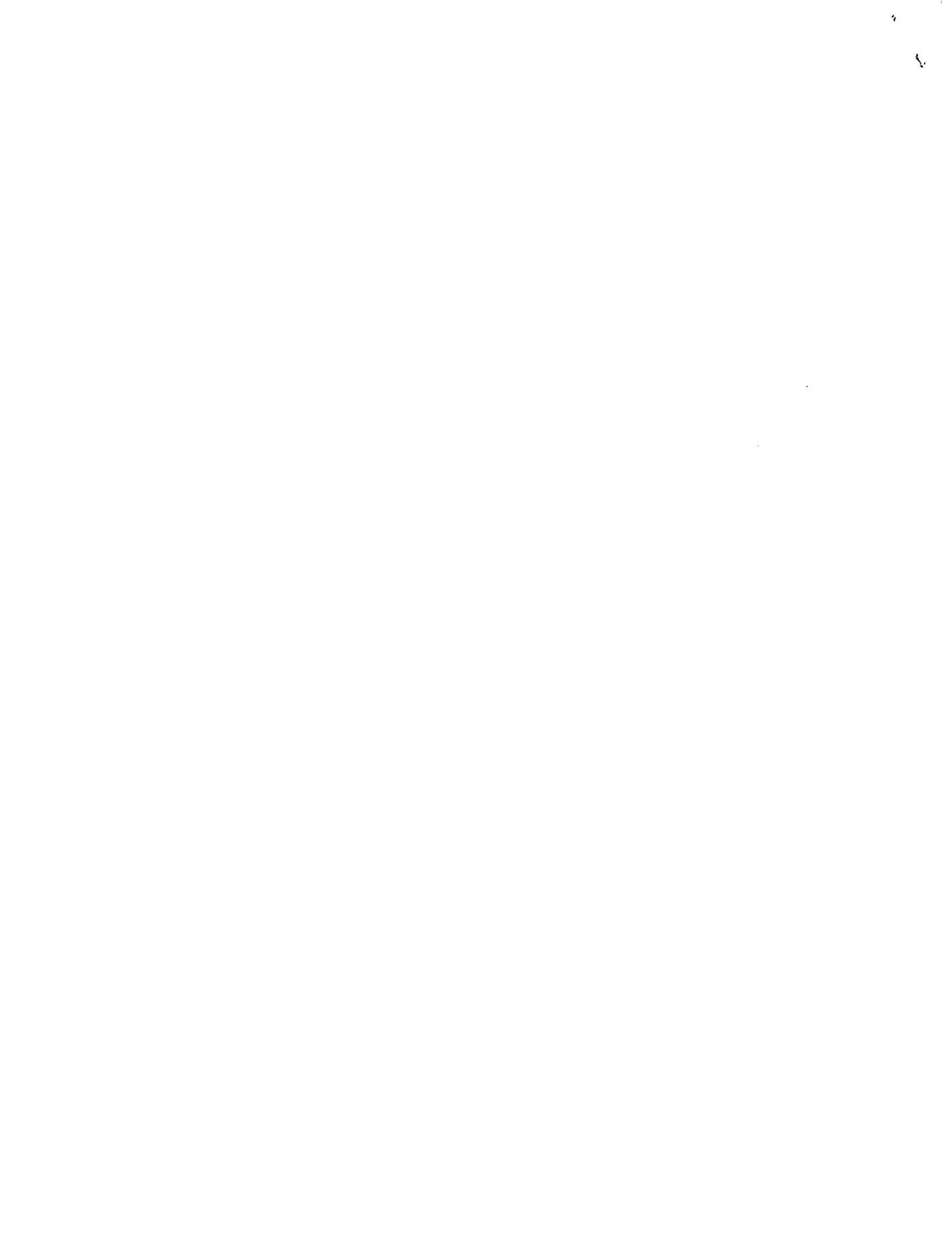
2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet



Item V:

Reference is made to the following documents:

- D1 = Van den Oord A.H.A. and J.J. Wesdorp, 1979
D2 = WPI/Derwent Abstract AN 86-303998 (SU-A-1220611)
D3 = WPI/Derwent Abstract AN 1977-42665Y (JP-B-52018775)
D4 = FR-A-2 315 858
D5 = WO-A-97-02760
D6 = DD-A-142 144

D2 was not cited in the International Search Report.

1. A combined heat and hydrogen peroxide treatment of blood products such as "centriblood" was known in the art, see D1 and D2. It was also known in the art of texturising proteins that in order to obtain meat-like fibres, techniques like extrusion, expansion and spinning can be applied. D3 and D4 refer to coagulation and pressing of a soy protein material to obtain a meat-like product, but the structure is not specifically mentioned. D5 discloses the production of chunks having a striated appearance, by emulsification in an emulsion mill and coagulation.

However, the subject-matter of claim 1, namely heating, adding hydrogen peroxide and compressing, was not disclosed before. Furthermore, the formation of a laminar structure by simple compressing could not have been foreseen on the basis of the cited prior art; D1 only mentions the coagulation into small beads.

Thus, the subject-matter of claims 1-8 is considered to be novel and to involve an inventive step (Articles 33(2) and (3) PCT).

2. The subject-matter of claim 9 is not novel in view of D5 and D6, which disclose the preparation of a protein chunk, wherein a protein solution, containing a major proportion of blood, is heat- coagulated and stirred intensively.

3. Claims 10 and 11 cannot be considered new or inventive as they are not clear (see below).

Item VIII:

Claims 10 and 11 are not clear as they refer to the description (Article 6, Rule 6.2(a)). The same applies to the expression "as herein defined" in claims 1 and 2.



P.B.5818 - Patentlaan 2
2280 HV Rijswijk (ZH)
C (070) 3 40 20 40
TX 31651 epo nl
FAX (070) 3 40 30 16

Europäisch s
Pat ntamt

European
Patent Offic

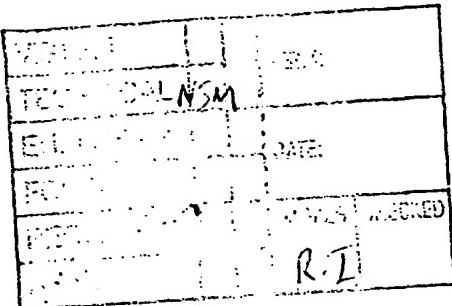
Office uropéen
des brevets

Zweigstelle
in Den Haag

Branch at
The Hague

Département à
La Haye

REDDIE & GROSE
16, Theobalds Road
London WC1X 8PL
UNITED KINGDOM



03 NOV 1998

- Aktenzeichen/Filé N°./No. du Dossier

RS 101335 GB

Datum/Date

02 11 98

Das Europäische Patentamt übermittelt hiermit den Standardrecherchenbericht zu dem unten bezeichneten Antrag; Kopien der im Recherchenbericht angeführten Schriften werden in der Anlage beigefügt.

The European Patent Office herewith transmits the Standard Search Report relating to the request indicated below; copies of the documents cited in the search report are enclosed.

L'Office Européen des Brevets à l'honneur de vous transmettre ci-joint le Rapport de Recherche concernant la demande désignée ci-dessous; des copies des documents cités sont jointes.

| | |
|--|-----------------|
| Zeichen und Datum des Antrages Applicant's reference and date Références et date de la demande | NSM/NT/cd/39487 |
| Dokument, Gegenstand der Recherche Document subject of the search Objet de la recherche | GBA 9814395 |
| Einreichungstag Filing date Date de dépôt | 02/07/1998 |
| Beanspruchte Priorität Priority claimed Priorité revendiquée | |

OFFICE EUROPÉEN DES BREVETS
Pour le Vice-Président,

R.C. VAN DIJK





| DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|---|---|------------------------|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim |
| X | OORD A H A VAN DEN ET AL: "Decolouration of slaughterhouse blood by treatment with hydrogen peroxide." PROCEEDINGS OF THE EUROPEAN MEETING OF MEAT RESEARCH WORKERS, 1979, XP002081374 Unilever Res. Vlaardingen/Duiven, PO Box 7, Zevenaar, Netherlands * page 827-828 * --- | 1-12 |
| A | US 4 143 168 A (BERNOTAVICZ JOHN W) 6 March 1979 * claims 1-19 * --- | 1-12 |
| A | DATABASE WPI Section Ch, Week 8646 Derwent Publications Ltd., London, GB; Class D12, AN 86-303998 XP002080707 & SU 1 220 611 A (AS BELO INORG GEN C) , 23 March 1986 * abstract * --- | 1 |
| A | GB 1 562 618 A (MARS LTD) 12 March 1980 * page 1; claims 1-11 * ----- | 1 |
| TECHNICAL FIELDS SEARCHED (Int.Cl.6) | | |
| A23J A23K | | |
| The present search report has been drawn up for all claims | | |
| 3 | Date of completion of the search 20 October 1998 | Examiner De Jong, E |
| CATEGORY OF CITED DOCUMENTS | | |
| X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | |
| T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | | |



ANNEX TO THE STANDARD SEARCH REPORT NO.

RS 101335

This annex lists the patent family members relating to the patent documents cited in the above-mentioned search report.
 The members are as contained in the European Patent Office EDP file on
 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-10-1998

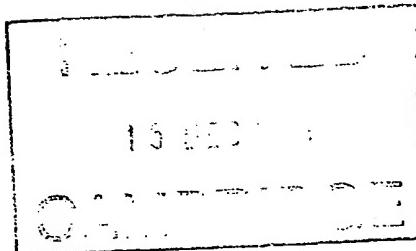
| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|---|---|---------------------|----------------------------|---------------|---------------------|
| US 4143168 | A | 06-03-1979 | BE | 847996 A | 04-05-1977 |
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| | | | FR | 2334306 A | 08-07-1977 |
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| | | | NL | 7612570 A | 10-06-1977 |
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| | | | SE | 7612570 A | 09-06-1977 |
| <hr/> | | | | | |
| GB 1562618 | A | 12-03-1980 | AT | 357411 B | 10-07-1980 |
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| | | | AU | 508150 B | 13-03-1980 |
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| | | | BE | 857359 A | 01-02-1978 |
| | | | CA | 1103979 A | 30-06-1981 |
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| | | | US | 4180592 A | 25-12-1979 |
| <hr/> | | | | | |





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LONDON
WC1X 8PL



The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

Examiner: 01633 813713
E-mail: P.Jenkins@patent.gov.uk
Switchboard: 01633 814000
Fax: 01633 814444

Your Reference: NSM/am/39887 *File at Cambridge*
Application No: GB 9915609.3

2 December 1999

NT

RI

Dear Sirs

Patents Act 1977: Search Report under Section 17(5)

I enclose two copies of my search report and two copies of the citations. Please note that the cited documents are examples of documents which disclose the use of an oxidising agent and transition metal ions to coagulate proteins and a person skilled in the art would find it obvious to compress this coagulated protein into chunks having a laminar structure.

Plurality of invention

I consider that your application relates to more than one invention as follows:

- I. A method of forming a coagulated protein chunk by mixing a protein with transition metal ions and an oxidising agent or mixing a protein with the free radicals generated by reacting transition metal ions with an oxidising agent (claims 1-12 & 14).
- II. An edible chunk (claims 13 and 15)

My search report relates to the first invention only. If you want the other invention searched, you should file a further Patents Form 9/77.





INVESTOR IN PEOPLE

Application No: GB 9915609.3

Page 2

2 December 1999

Publication

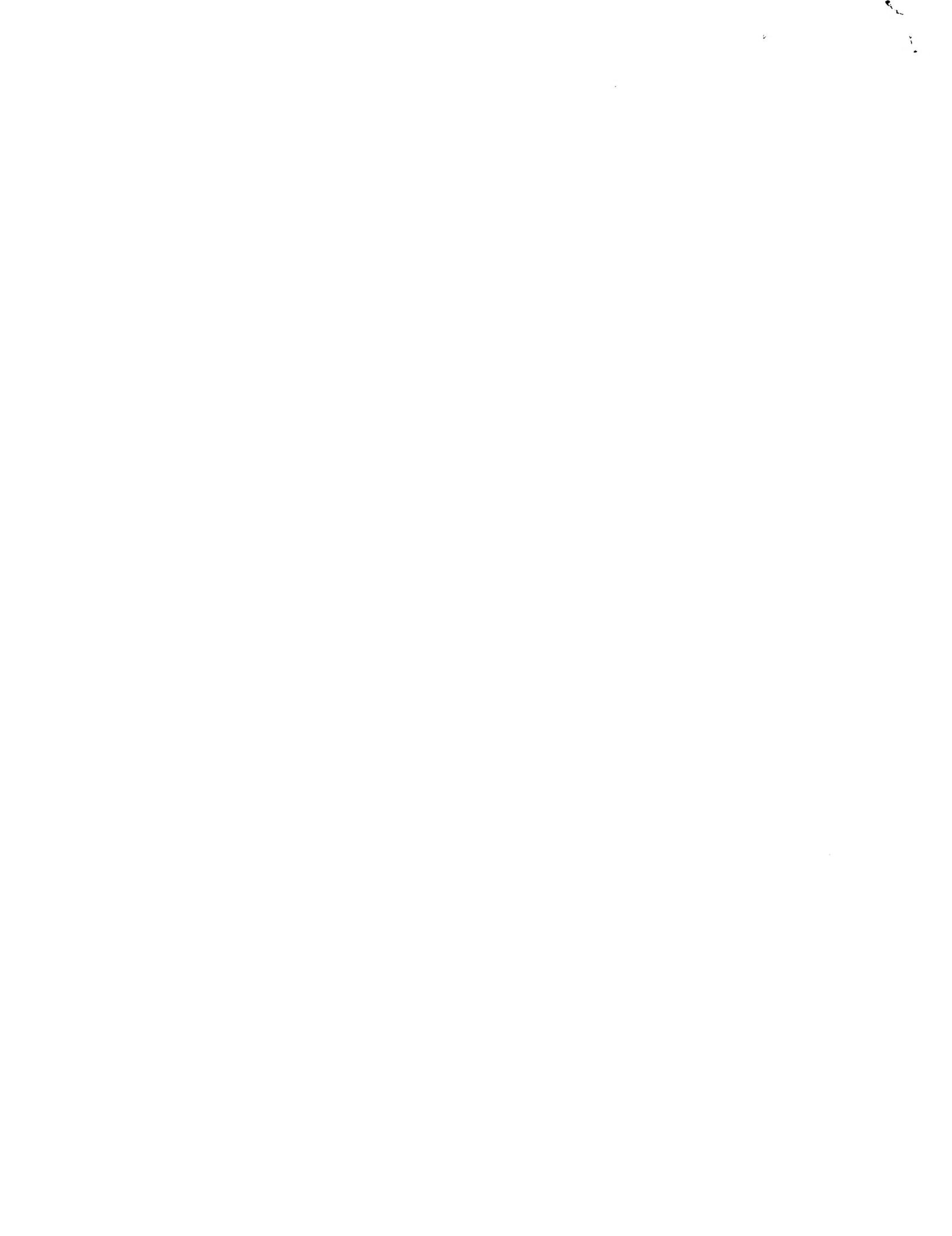
I estimate that, provided you have met all formal requirements, preparations for publication of your application will be completed soon after **5 January 2000**. You will then receive a letter informing you of completion and telling you the publication number and date of publication.

Amendment/withdrawal

If you wish to file amended claims for inclusion with the published application, or to withdraw the application to prevent publication, you must do so before the preparations for publication are completed. **No reminder will be issued.** If you write to the Office less than 3 weeks before the above completion date, please mark your letter prominently: "**URGENT - PUBLICATION IMMINENT**".

Yours faithfully

Dr Paul D Jenkins
Examiner





Application No: GB 9915609.3
Claims searched: 1-12 & 14

Examiner: Dr Paul D Jenkins
Date of search: 30 November 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): A2B (BLP, BMA2, BMA9, BMM3, BMM4, BMM9, BMM29)

Int Cl (Ed.6): A23J; A23K 1/04; A23L 1/314

Other: Online: CAS-ONLINE, EPODOC, JAPIO, WPI

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| C | GB 2146337 A (DEVRO) see especially example II | 1-12 |
| C | GB 1562618 (MARS) see especially page 1, lines 36-41, page 3, lines 30-35 and example 1 | 1-12 |
| X | EP 0460219 A1 (OGAWA) see especially example 1 | 1-12 |

Document indicating lack of novelty or inventive step
Document indicating lack of inventive step if combined
with one or more other documents of same category.

Member of the same patent family

- A Document indicating technological background and/or state of the art.
- P Document published on or after the declared priority date but before the filing date of this invention.
- E Patent document published on or after, but with priority date earlier than, the filing date of this application.





File at Cambridge

JMD/INT

RI

Reference: JMD/JS
Appn No: GB 9915608.5

1999

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

Examiner: 01633 813713
E-mail: P.Jenkins@patent.gov.uk
Switchboard: 01633 814000
Fax: 01633 814444

39487

1977: Search Report under Section 17(5)

Two copies of my search report and two copies of the citations. Please note that it is well known to use hydrogen peroxide in the coagulating colourisation of blood to afford solid products that are used as food or food and two examples are cited. A man skilled in the art would find it obvious to these products and form blood chunks.

Other Invention

That your application relates to more than one invention as follows:

A method of manufacturing a blood chunk by heating a blood fraction and adding hydrogen peroxide (claims 1-8 & 10).

An edible chunk (claims 9 and 11)

This report relates to the first invention only. If you want the other invention you should file a further Patents Form 9/77.



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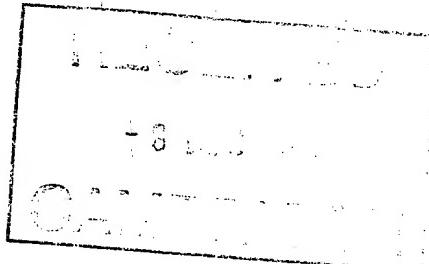
RI

rence: JMD/JS
No: GB 9915608.5

1999

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

Examiner: 01633 813713
E-mail: P.Jenkins@patent.gov.uk
Switchboard: 01633 814000
Fax: 01633 814444



39487

1977: Search Report under Section 17(5)

Two copies of my search report and two copies of the citations. Please note that it is well known to use hydrogen peroxide in the coagulating and colourisation of blood to afford solid products that are used as food or food additives and two examples are cited. A man skilled in the art would find it obvious to combine these products and form blood chunks.

Invention

that your application relates to more than one invention as follows:

A method of manufacturing a blood chunk by heating a blood fraction and adding hydrogen peroxide (claims 1-8 & 10).

An edible chunk (claims 9 and 11)

This report relates to the first invention only. If you want the other invention dealt with you should file a further Patents Form 9/77.



Application No: GB 9915608.5
Claims searched: 1-8 & 10

Examiner: Dr Paul D Jenkins
Date of search: 30 November 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): A2B (BLP, BMA2, BMA9, BMM3, BMM4, BMM9, BMM29)

Int Cl (Ed.6): A23J 1/06, 3/12; A23K 1/04; A23L 1/314

Other: Online: CAS-ONLINE, EPODOC, JAPIO, WPI

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| X | GB 1562618 (MARS) see especially page 1, lines 36-41, page 3, lines 30-35 and example 1 | 1-8 |
| X | EP 0460219 A1 (OGAWA) see especially example 1 | 1-8 |

- | | | | |
|---|---|---|--|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |



Patent Office



INVESTOR IN PEOPLE

Application No: GB 9915608.5

Page 2

2 December 1999

Publication

I estimate that, provided you have met all formal requirements, preparations for publication of your application will be completed soon after **5 January 2000**. You will then receive a letter informing you of completion and telling you the publication number and date of publication.

Amendment/withdrawal

If you wish to file amended claims for inclusion with the published application, or to withdraw the application to prevent publication, you must do so before the preparations for publication are completed. **No reminder will be issued.** If you write to the Office less than 3 weeks before the above completion date, please mark your letter prominently: **"URGENT - PUBLICATION IMMINENT".**

Yours faithfully

Dr Paul D Jenkins
Examiner

PATENT COOPERATION TREATY

PCT

REC'D 05 OCT 2000
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | | |
|---|--|--|---|
| Applicant's or agent's file reference 39487/NT | FOR FURTHER ACTION | | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/GB99/02106 | International filing date (day/month/year) 02/07/1999 | Priority date (day/month/year) 02/07/1998 | |
| International Patent Classification (IPC) or national classification and IPC A23J3/12 | | | |
| Applicant MARS UK LIMITED et al. | | | |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> | | | |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application | | | |

| | |
|--|---|
| Date of submission of the demand 02/02/2000 | Date of completion of this report 03.10.2000 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | Authorized officer Ainscow, J Telephone No. +31 70 340 3886 |



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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/02106

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-5 as originally filed

Claims, No.:

1-11 as originally filed

Drawings, sheets:

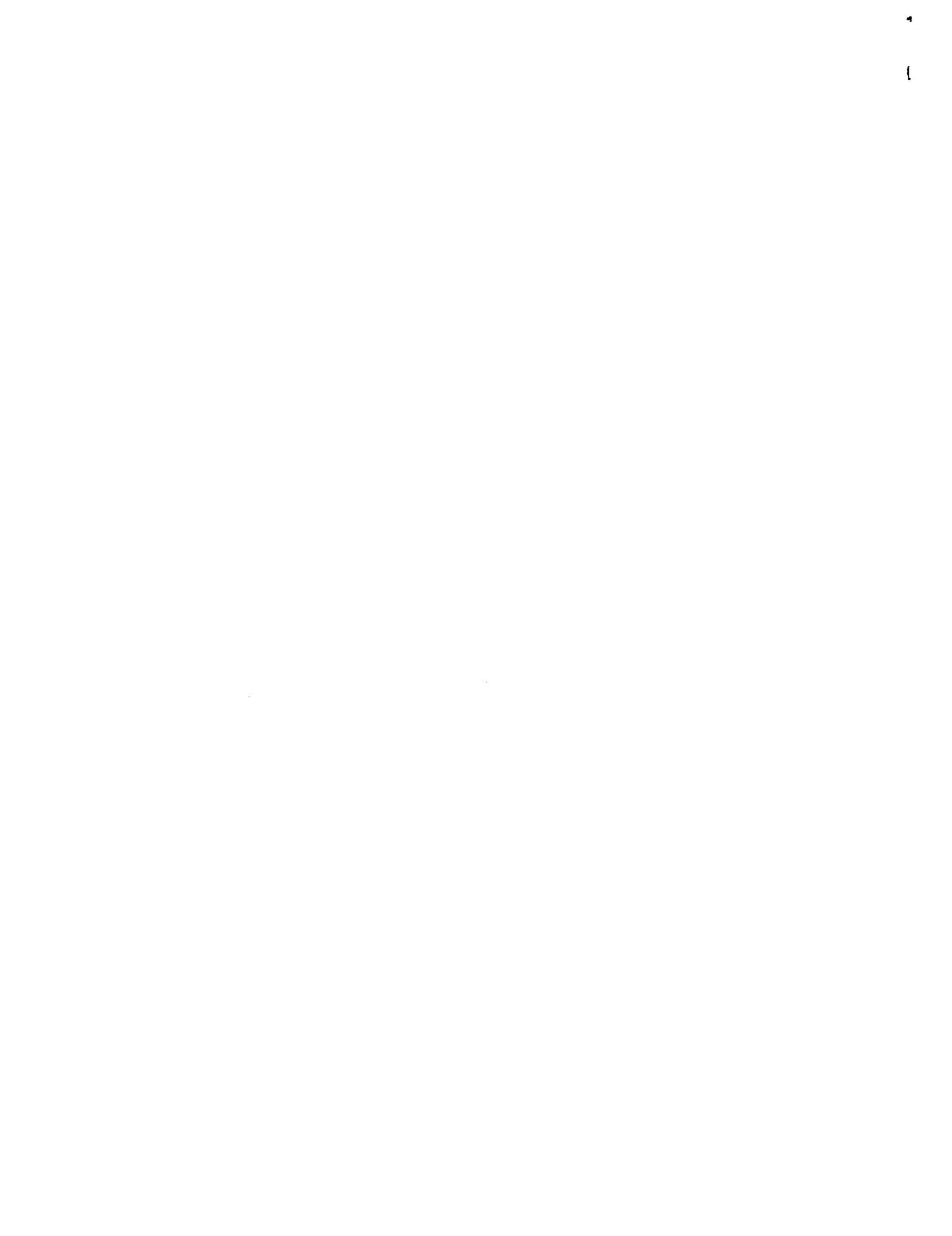
1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

the description, pages:
 the claims, Nos.:
 the drawings, sheets:

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/02106

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|------|-------------|
| Novelty (N) | Yes: | Claims 1-8 |
| | No: | Claims 9-11 |
| Inventive step (IS) | Yes: | Claims 1-8 |
| | No: | Claims 9-11 |
| Industrial applicability (IA) | Yes: | Claims 1-11 |
| | No: | Claims |

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/02106

Item V:

Reference is made to the following documents:

D1 = Van den Oord A.H.A. and J.J. Wesdorp, 1979

D2 = WPI/Derwent Abstract AN 86-303998 (SU-A-1220611)

D3 = WPI/Derwent Abstract AN 1977-42665Y (JP-B-52018775)

D4 = FR-A-2 315 858

D5 = WO-A-97-02760

D6 = DD-A-142 144

D2 was not cited in the International Search Report.

1. A combined heat and hydrogen peroxide treatment of blood products such as "centriblood" was known in the art, see D1 and D2. It was also known in the art of texturising proteins that in order to obtain meat-like fibres, techniques like extrusion, expansion and spinning can be applied. D3 and D4 refer to coagulation and pressing of a soy protein material to obtain a meat-like product, but the structure is not specifically mentioned. D5 discloses the production of chunks having a striated appearance, by emulsification in an emulsion mill and coagulation.

However, the subject-matter of claim 1, namely heating, adding hydrogen peroxide and compressing, was not disclosed before. Furthermore, the formation of a laminar structure by simple compressing could not have been foreseen on the basis of the cited prior art; D1 only mentions the coagulation into small beads.

Thus, the subject-matter of claims 1-8 is considered to be novel and to involve an inventive step (Articles 33(2) and (3) PCT).

2. The subject-matter of claim 9 is not novel in view of D5 and D6, which disclose the preparation of a protein chunk, wherein a protein solution, containing a major proportion of blood, is heat- coagulated and stirred intensively.

3. Claims 10 and 11 cannot be considered new or inventive as they are not clear (see below).

Item VIII:

Claims 10 and 11 are not clear as they refer to the description (Article 6, Rule 6.2(a)). The same applies to the expression "as herein defined" in claims 1 and 2.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference 39487 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 99/ 02106 | International filing date (day/month/year) 02/07/1999 | (Earliest) Priority Date (day/month/year) 02/07/1998 |
| Applicant MARS UK LIMITED et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- contained in the international application in written form.
 - filed together with the international application in computer readable form.
 - furnished subsequently to this Authority in written form.
 - furnished subsequently to this Authority in computer readable form.
 - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. Certain claims were found unsearchable (See Box I).

3. Unity of invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

None of the figures.

INTERNATIONAL SEARCH REPORT

National Application No

PCT/GB 99/02106

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A23J3/12 A23K1/04 A23J3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
 IPC 7 A23J A23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | OORD A H A VAN DEN ET AL: "Decolouration of slaughterhouse blood by treatment with hydrogen peroxide" ABSTRACTS AND COMMUNICATIONS. EUROPEAN MEETING OF MEAT RESEARCH WORKERS, 1 January 1979 (1979-01-01), page 827/828 XP002081374 the whole document --- | 1-8 |
| A | ANTOLA A ET AL: "TOLERANCE TO TRANSIENT FAULTS IN MICROPROGRAMMED CONTROL UNITS" IEEE TRANSACTIONS ON RELIABILITY, vol. 39, no. 5, 1 December 1990 (1990-12-01), pages 535-546, XP000208707 ISSN: 0018-9529 the whole document --- | 1-8 -/- |

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

25 October 1999

26/11/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

De Jong, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02106

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | DATABASE WPI Section Ch, Week 197724 Derwent Publications Ltd., London, GB; Class D12, AN 1977-42665Y XP002120044 & JP 52 018775 B (FUJI OIL CO LTD), 24 May 1977 (1977-05-24) abstract --- | 1-8 |
| A | FR 2 315 858 A (ANVAR) 28 January 1977 (1977-01-28) claims 1,2 --- | 1-8 |
| X | WO 97 02760 A (NESTLE SA) 30 January 1997 (1997-01-30) | 9-11 |
| A | the whole document --- | 1-8 |
| X | DD 142 144 A (KUMMER SIEGFRIED; LCHAGWAA GURRAGTSCHAGIJN; RAEUBER HANS JOERG) 11 June 1980 (1980-06-11) | 9-11 |
| A | the whole document --- | 1-8 |
| A | DATABASE FSTA 'Online! INTERNATIONAL FOOD INFORMATION SERVICE (IFIS), FRANFURT/MAIN, DE FAJVISEVSKIJ M L ET AL: "Extrusion technology of processing and utilization of slaughterhouse blood." Database accession no. 94-1-07-s0026 XP002120043 abstract & TEHNOLOGIJA MESA, vol. 34, no. 2/3, 1993, pages 58-60, VNIIMP, Moscow, Russia --- | 1-8 |
| A | US 4 293 576 A (SENTANCE CHRISTOPHER B) 6 October 1981 (1981-10-06) the whole document --- | 1-8 |
| A | DATABASE WPI Section Ch, Derwent Publications Ltd., London, GB; Class D13, AN 1971-71383S XP002120045 & SU 289 804 A (UKRAINIAN MEAT AND MILK I) abstract ----- | 1-8 |



INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/02106

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|--|------------------|-------------------------|--|------------------|
| JP 52018775 B | 22-07-1974 | JP 973546 C | | 28-09-1979 |
| | | JP 49075761 A | | 22-07-1974 |
| FR 2315858 A | 28-01-1977 | NONE | | |
| WO 9702760 A | 30-01-1997 | AU 701156 B | | 21-01-1999 |
| | | AU 6656196 A | | 10-02-1997 |
| | | CA 2222714 A | | 30-01-1997 |
| | | EP 0837637 A | | 29-04-1998 |
| DD 142144 A | 11-06-1980 | NONE | | |
| US 4293576 A | 06-10-1981 | AT 368685 B | | 25-10-1982 |
| | | AT 595778 A | | 15-03-1982 |
| | | AU 527766 B | | 24-03-1983 |
| | | AU 3892678 A | | 21-02-1980 |
| | | BE 869744 A | | 14-02-1979 |
| | | CA 1120309 A | | 23-03-1982 |
| | | CH 643987 A | | 13-07-1984 |
| | | DE 2835516 A | | 22-02-1979 |
| | | DK 355178 A | | 16-02-1979 |
| | | FR 2400328 A | | 16-03-1979 |
| | | GB 2002218 A, B | | 21-02-1979 |
| | | IE 47168 B | | 11-01-1984 |
| | | IT 1097948 B | | 31-08-1985 |
| | | JP 54049881 A | | 19-04-1979 |
| | | NL 7808449 A | | 19-02-1979 |
| | | SE 7808613 A | | 16-02-1979 |
| SU 289804 A | | NONE | | |

XP-002120043

| | |
|------|---------|
| P.D. | 1994 |
| p. | 1 = (1) |

AN - 94-1-07-s0026 FSTA
DT - J Journal
TFT - S - Meat, poultry & game
TI - Extrusion technology of processing and utilization of slaughterhouse blood.
AU - Fajvisevskij M L; Lisina T N
PUB - Tehnologija Mesa
- 1993
- VNIIMP, Moscow, Russia
IRN - ISSN 0494-9846
VOL - 34
NR - 2/3
PG - 58 - 60
LA - Sh, en
IW - Cereal products; Blood
- Cereal products
AW - BLOOD; CEREAL PRODUCTS
- ISBN 0-85954-329-3
AB - A blood product made by extrusion processing of a mixture of blood, wheat flour, corn starch and dried milk is described. Data are given for mineral, vitamin, amino and fatty acid compositions of the extruded product, together with expansion characteristics and nutritional value (assessed in rat feeding trials). Results showed that the extruded product had high Fe availability. It is concluded that extrusion processing of blood/cereal mixtures is a useful method for manufacture of blood-containing foods for use as a dietary Fe source.

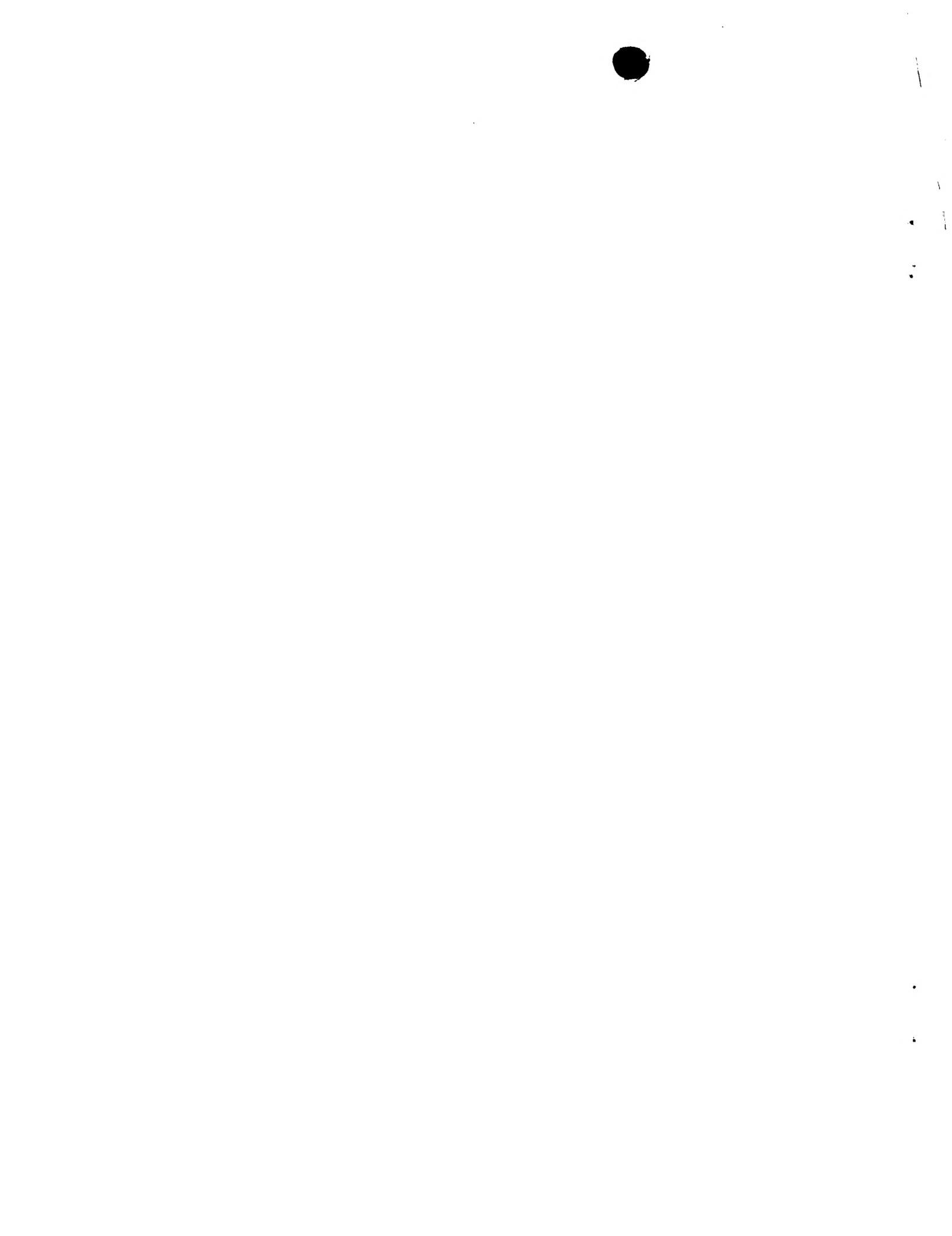
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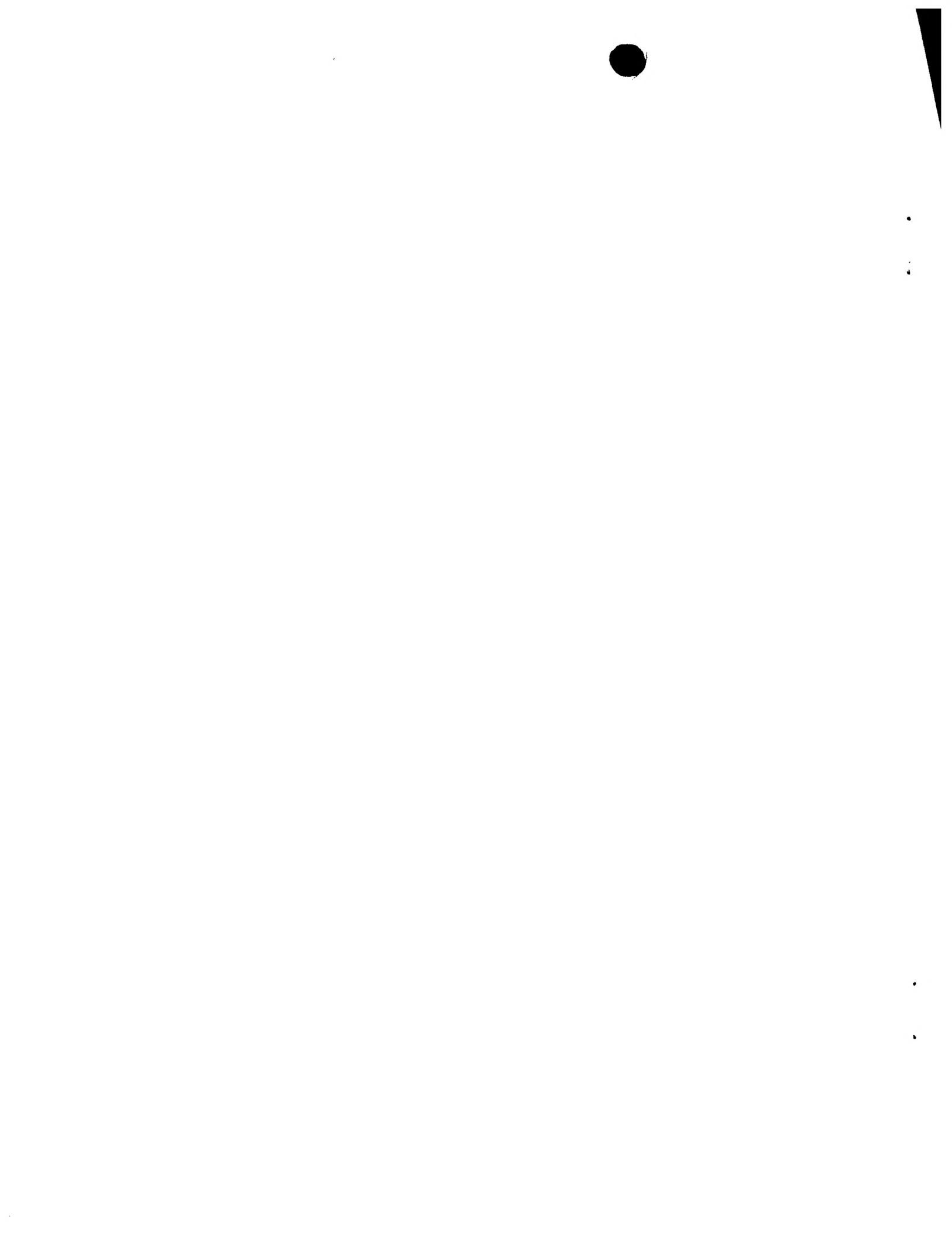
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| (71) Applicant (<i>for all designated States except US</i>): MARS UK LIMITED [GB/GB]; 3D Dundee Road, Slough, Berkshire SL1 4LG (GB). | | Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> | |
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| (74) Agent: MARLOW, N., S.; Reddie & Grose, 16 Theobalds Road, London WC1X 8PL (GB). | | | |
| (54) Title: BLOOD CHUNKS | | | |
| (57) Abstract | | | |
| <p>The invention provides a method of manufacturing a blood chunk. The method comprises heating a blood fraction, adding hydrogen peroxide, and compressing the resulting reaction product to form a chunk having a laminar structure. An edible chunk comprising a major proportion of blood protein and having a fibrous, laminar internal structure is also described.</p> | | | |



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BLOOD CHUNKS

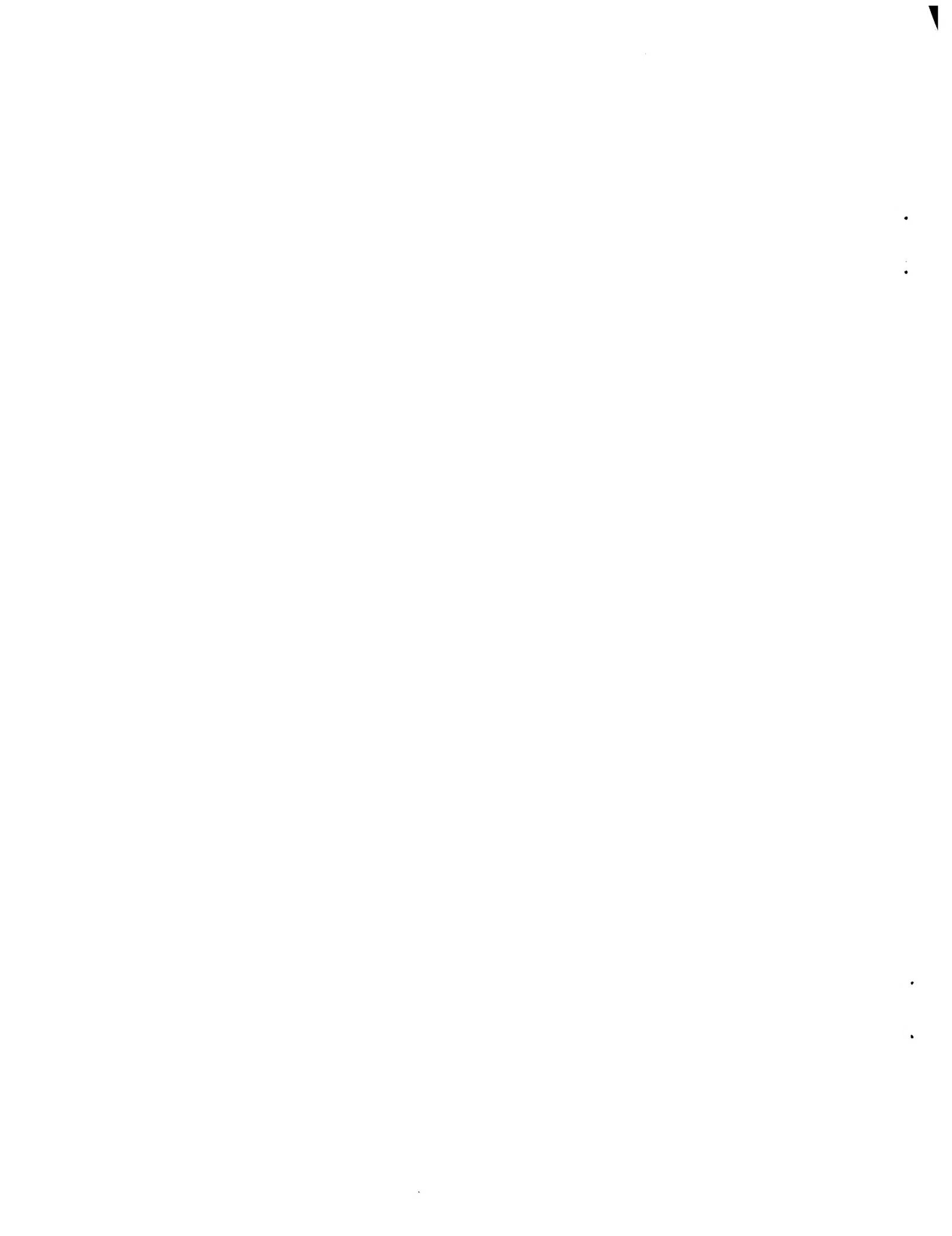
The present invention relates to the preparation of a novel edible chunk comprising blood, and to the chunk itself.

5

Blood and blood fractions are used in the manufacture of pet foods as a nutrient. In particular, the hæmoglobin fraction of whole blood is employed; by the hæmoglobin fraction is meant the residue from whole blood once the plasma, or most 10 of the plasma, has been removed. The hæmoglobin fraction consists of red and white blood cells with a residue of plasma. The hæmoglobin fraction typically contains from about 14% to 40% protein and about 35% to 45% red blood cells. The remainder is mainly water together with other 15 blood components.

Conventionally, whole blood is heated by scraped surface heating or steam infusion to 75°C and treated with hydrogen peroxide to decolour it. The decoloured blood is dewatered 20 to give a powder. In alternative techniques, whole blood is coagulated with for example a solution containing calcium ions and the resulting coagulate cut into chunks. Such chunks are homogeneous in texture, resembling liver.

It has now been found that if a blood fraction, defined 25 herein as comprising from about 14% to about 40% protein and about 35% to 45% red blood cells, is heated and treated with hydrogen peroxide a solid foam results. The foam reaction product can be cut into chunks and incorporated into, for example, pet food. If the foam reaction product is 30 compressed, a textured solid mass is produced. The compressed solid mass has a laminar structure similar to that of cooked meat.



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The blood fraction may be formed in any way. The blood fraction may be the haemoglobin fraction of blood. Alternatively, the blood fraction may be formed by removing water from whole blood to concentrate it so that it 5 comprises from about 14% to about 40% protein and about 35% to 45% red blood cells. The blood fraction may be reconstituted from purified protein and red blood cells.

According to the invention there is provided a method of 10 forming a blood chunk comprising heating a blood fraction (as defined above), treating the heated blood fraction with hydrogen peroxide and compressing the resulting reaction product to form a chunk having a laminar structure.

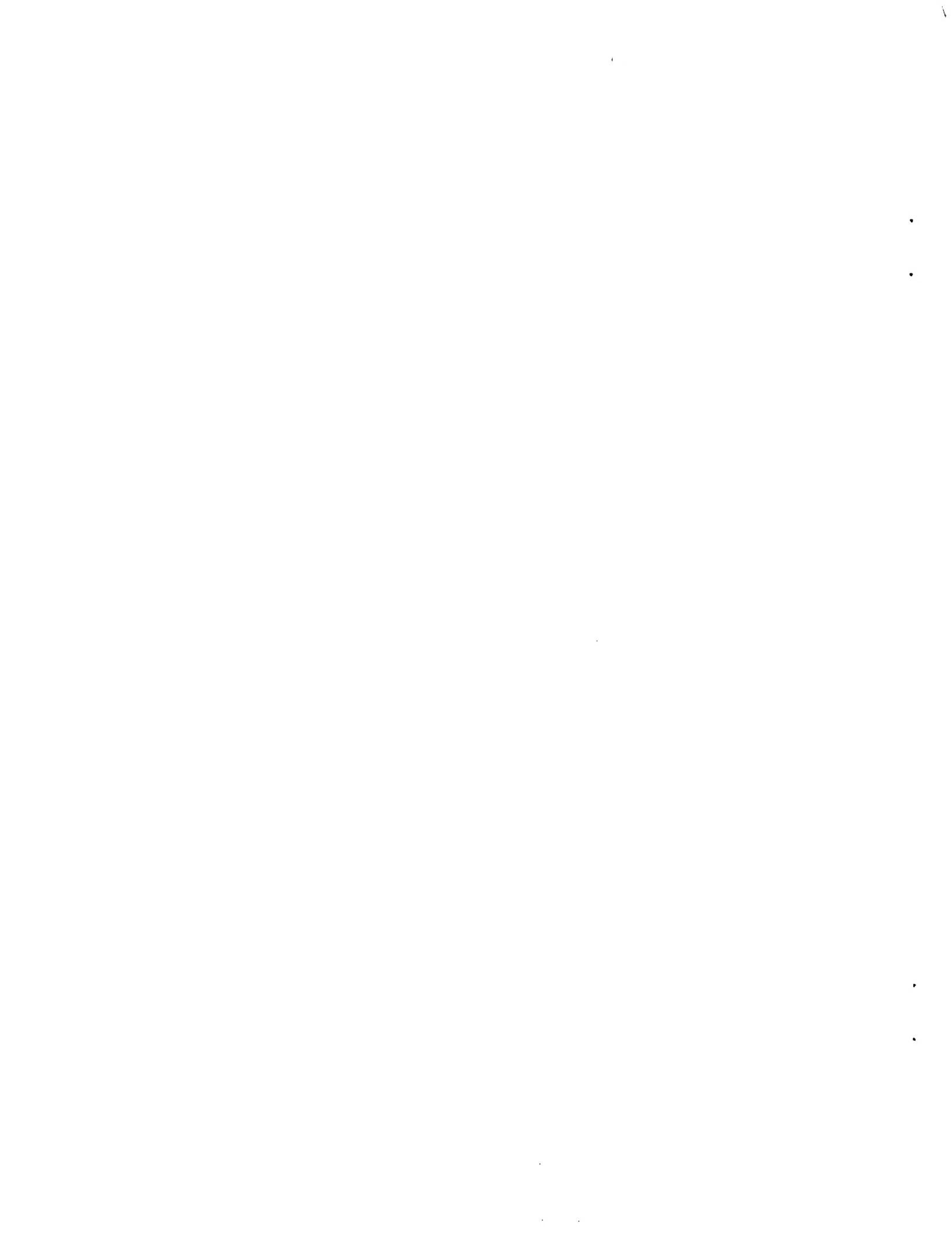
Preferably the blood fraction is a haemoglobin fraction (as 15 defined above).

Preferably the hydrogen peroxide is added to the blood fraction at at least 0.5% by weight. There does not appear to be a significant upper limit to the concentration of hydrogen peroxide in the reaction mixture which is effective 20 to cause the desired reaction to take place; concentrations of up to 3% (by weight) have been found satisfactory.

Preferably, compression is carried out at a temperature greater than 60°C.

25 Preferably the blood fraction is heated to between 60°C and 80°C before addition of the hydrogen peroxide.

Preferably the blood fraction comprises at least about 10%, more preferably at least about 15%, by weight protein. At 30 lower protein concentrations, the reaction product does not absorb all the water present in the reaction mixture. Such products are useful and their manufacture falls within the scope of the present invention; however, it will usually be



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necessary to remove the proteinaceous material from the unabsorbed water before it is used.

Additives may be included in the blood fraction to modify 5 the nutritional content and flavour of the chunks. It is preferred that the pH of the blood fraction is no less than 4, and that it is no greater than 9.

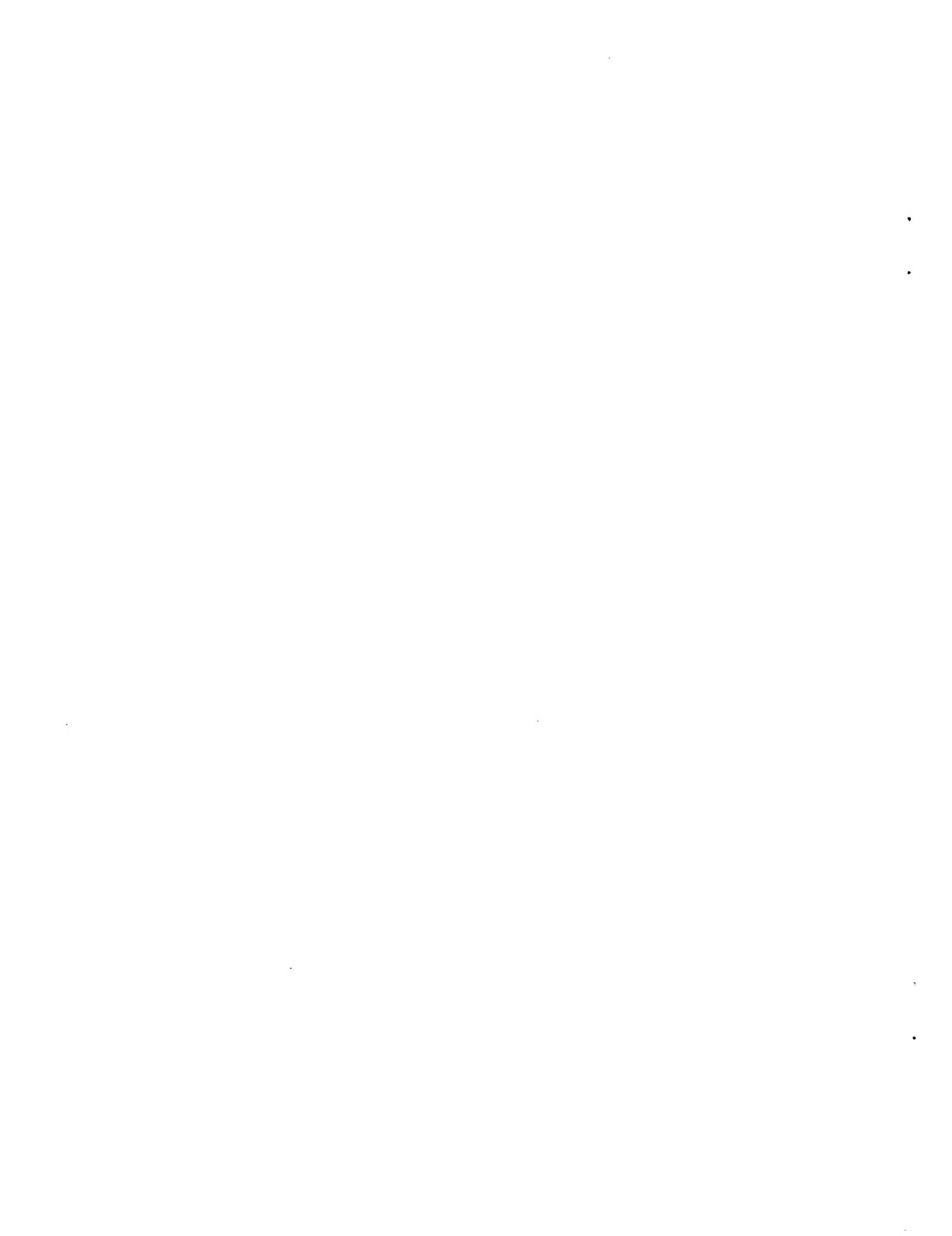
Compression of the reaction product of the blood fraction 10 and hydrogen peroxide can be carried out on the reaction product as it is formed, or the reaction product can be stored and then subjected to heating, for example by microwave radiation, prior to compressing. Alternatively, the reaction product may be steamed to give a product having 15 a jelly-like texture. The steaming can be carried out with meat juices or other flavoured aqueous media to impart particular flavours to the product.

The product can be dried, preferably at about 60°C, to produce hard, crunchy chunks, which are useful as a dry pet food.

20 The reaction product of the blood fraction and hydrogen peroxide can be compressed under its own weight.

The reaction product may be compressed as a result of restriction of any expansion of the reaction product caused by evolution of gas as the blood fraction and hydrogen 25 peroxide react.

The pressure at which the reaction product of the blood fraction and hydrogen peroxide is compressed to achieve the laminar internal structure is not critical; a pressure of up to about 400 kPa is preferred.



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Also according to the invention there is provided an edible chunk comprising a major amount of blood protein and having a fibrous, laminar internal structure.

- 5 The invention will be further described, by way of example, with reference to the drawings in which;

Figure 1 shows schematically a method according to a first embodiment of the invention;

- 10 Figure 2 shows schematically a method according to a second embodiment of the invention; and

Figure 3 shows schematically a method according to a third embodiment of the invention.

The methods according to the invention shown in the drawings include the following common features. The hæmoglobin fraction of blood is pumped from a tank 10 by a peristaltic pump 12 to a steam infuser 14 where the hæmoglobin is heated to about 75°C. The heated hæmoglobin passes from the steam infuser 14 to a high shear mixer reactor 16, such as a Dispax reactor. In the Dispax reactor, the hæmoglobin is reacted with hydrogen peroxide pumped from a hydrogen peroxide tank 18 by a hydrogen peroxide pump 20. In the reactor 16, the hæmoglobin and the hydrogen peroxide are mixed efficiently. Preferably, the reactor is a high shear, low volume mixer to ensure adequate mixing of the two components.

In the first embodiment of the invention, shown in Figure 1, the foam reaction product 22 is deposited in a tray 24. The reaction product 22 can be allowed to be compressed by its own weight, in which case the solid mass produced is elastic and can be cut up to provide elastic chunks. Alternatively, pressure can be applied to the reaction product 22 in the

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tray by application of a pressure plate 26. On release of the pressure plate a solid product 28 having a fibrous, laminar internal structure is produced, which can then be cut into chunks 30 as at 32.

5 In the second embodiment of the invention, shown in Figure 2, the reaction product 22 from the reactor 16 is passed to a piston pump 40 in which the reaction product is compressed. As the reaction product 22 leaves the piston pump 40, it is diced as at 42 to produce chunks 44 having a
10 fibrous, laminar internal structure.

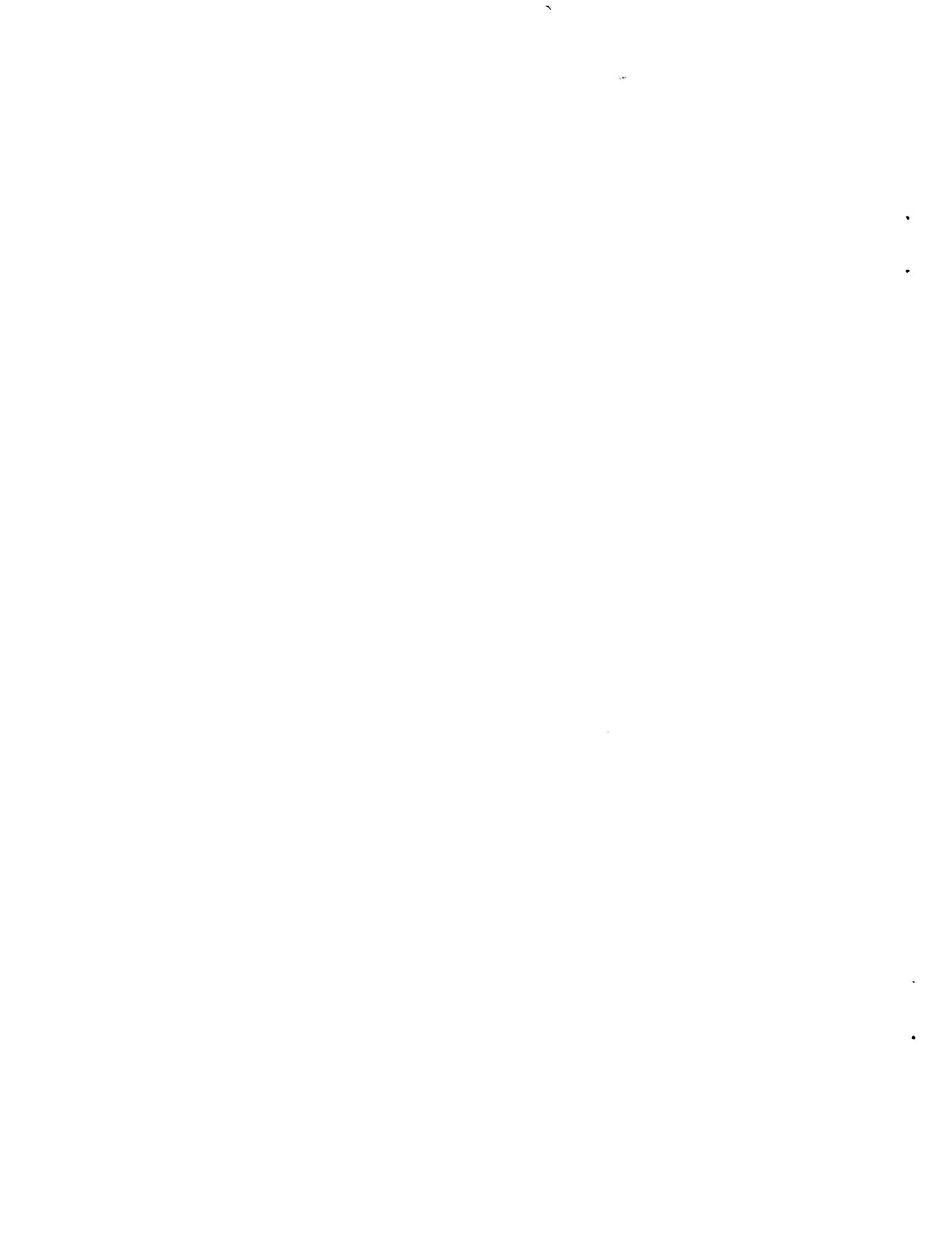
In the third embodiment of the invention, shown in Figure 3, the reaction product 22 leaves the reactor 16 through a disperser 50, from where it passes into a mouth formed by the widely separated ends of two converging continuous belts
15 52, 44. The reaction product is compressed between the two continuous belts, and the resulting solid sheet 56 is cut into chunks 58 as it leaves the continuous belts 52, 54, as at 60. Again, the chunks produced have a fibrous, laminar internal structure.

20 The chunks have a fibrous, laminar internal structure, similar to that of meat chunks, so that the chunks can be readily used in canned food stuffs such as pet foods to provide a protein source which is analogous in appearance and texture to meat.

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CLAIMS

1. A method of manufacturing a blood chunk comprising:
heating a blood fraction (as herein defined); adding
5 hydrogen peroxide; and compressing the resulting reaction
product to form a chunk having a laminar structure.
2. A method according to claim 1 in which the blood
fraction is a haemoglobin fraction (as herein defined).
3. A method according to claim 1 or 2 in which the
10 compression is carried out at a temperature greater than
60°C.
4. A method according to any preceding claim in which the
compressed product is dried.
- 15 5. A method according to any preceding claim further
comprising steaming the reaction product of the blood
fraction and the hydrogen peroxide.
6. A method according to any preceding claim in which the
hydrogen peroxide is added to the blood fraction at at least
20 0.5% (by weight).
7. A method according to any preceding claim in which the
blood fraction is heated to between 60°C and 80°C before
addition of the hydrogen peroxide.
- 25 8. A method according to any preceding claim in which the
blood fraction comprises at least 10%, preferably at least
15%, protein by weight.
9. An edible chunk comprising a major proportion of blood
protein and having a fibrous, laminar internal structure.



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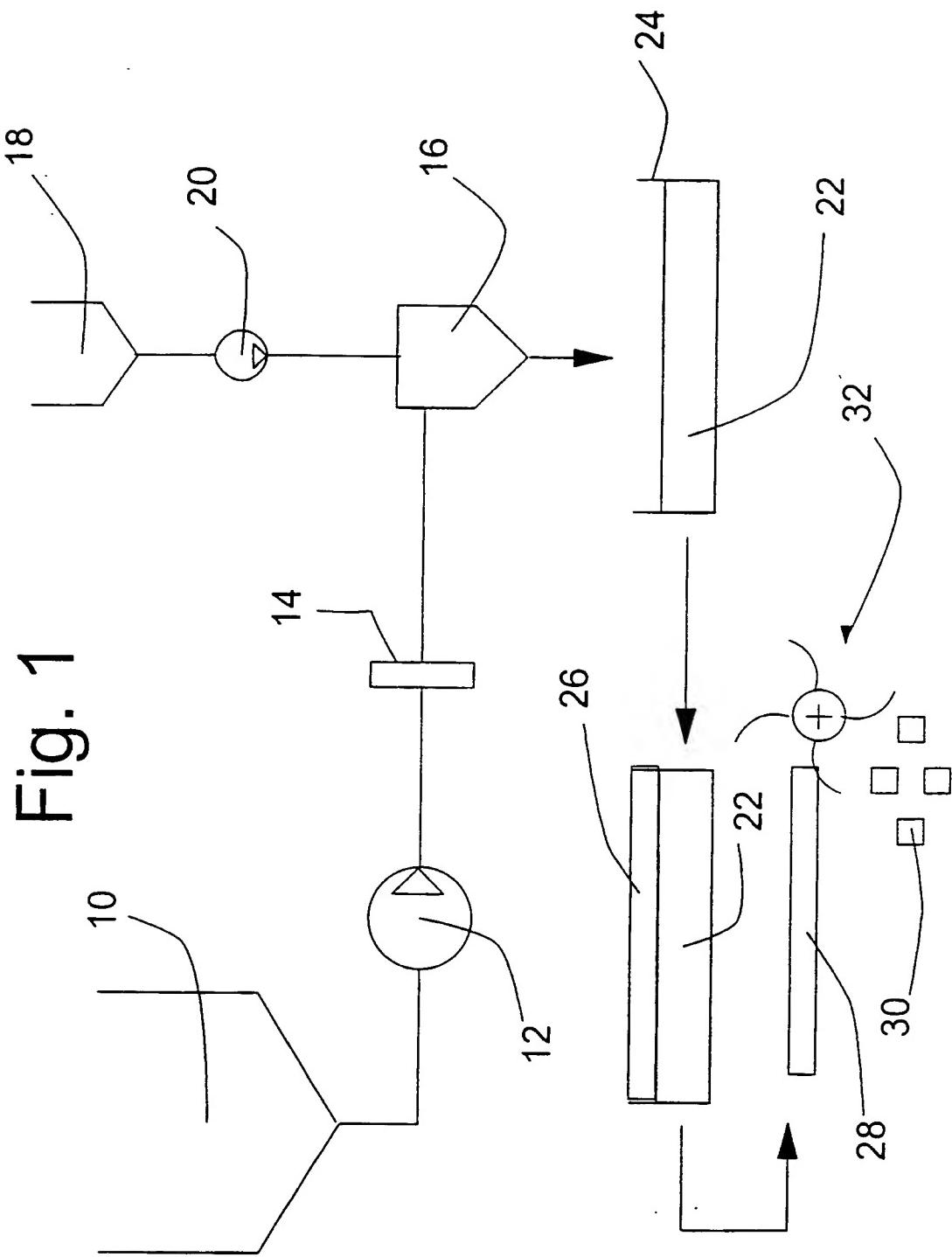
10. A method substantially as described.

11. A chunk substantially as described.

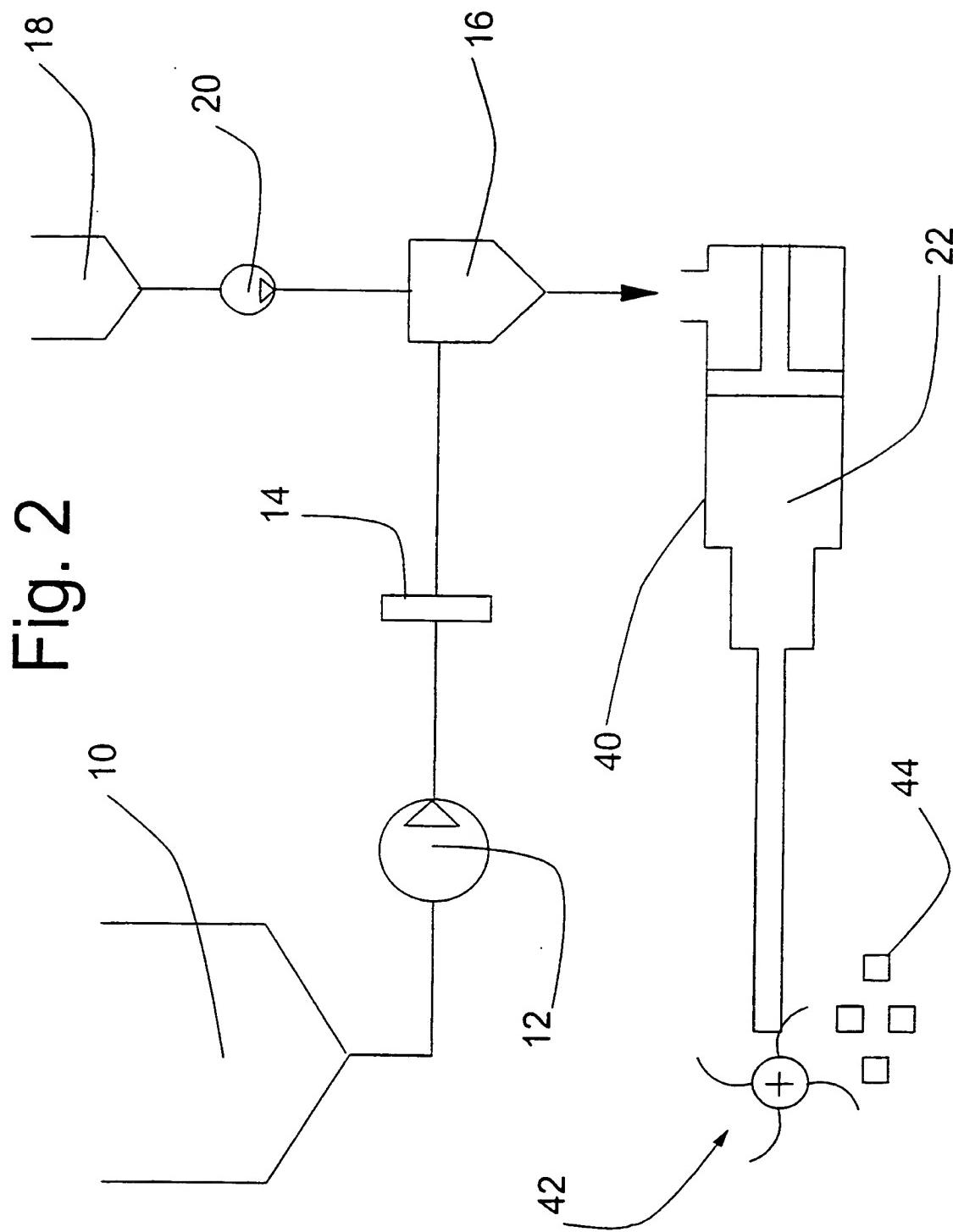


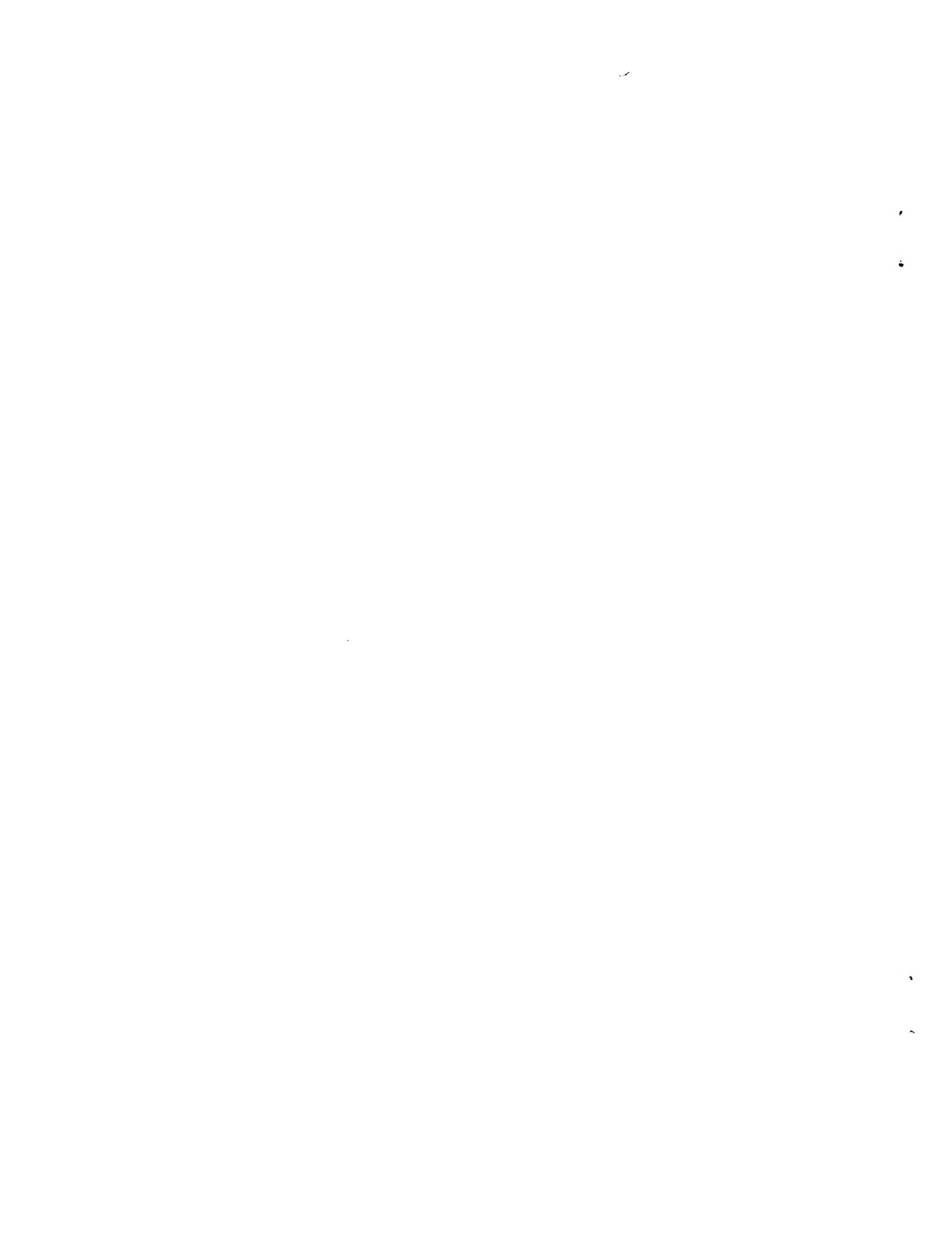
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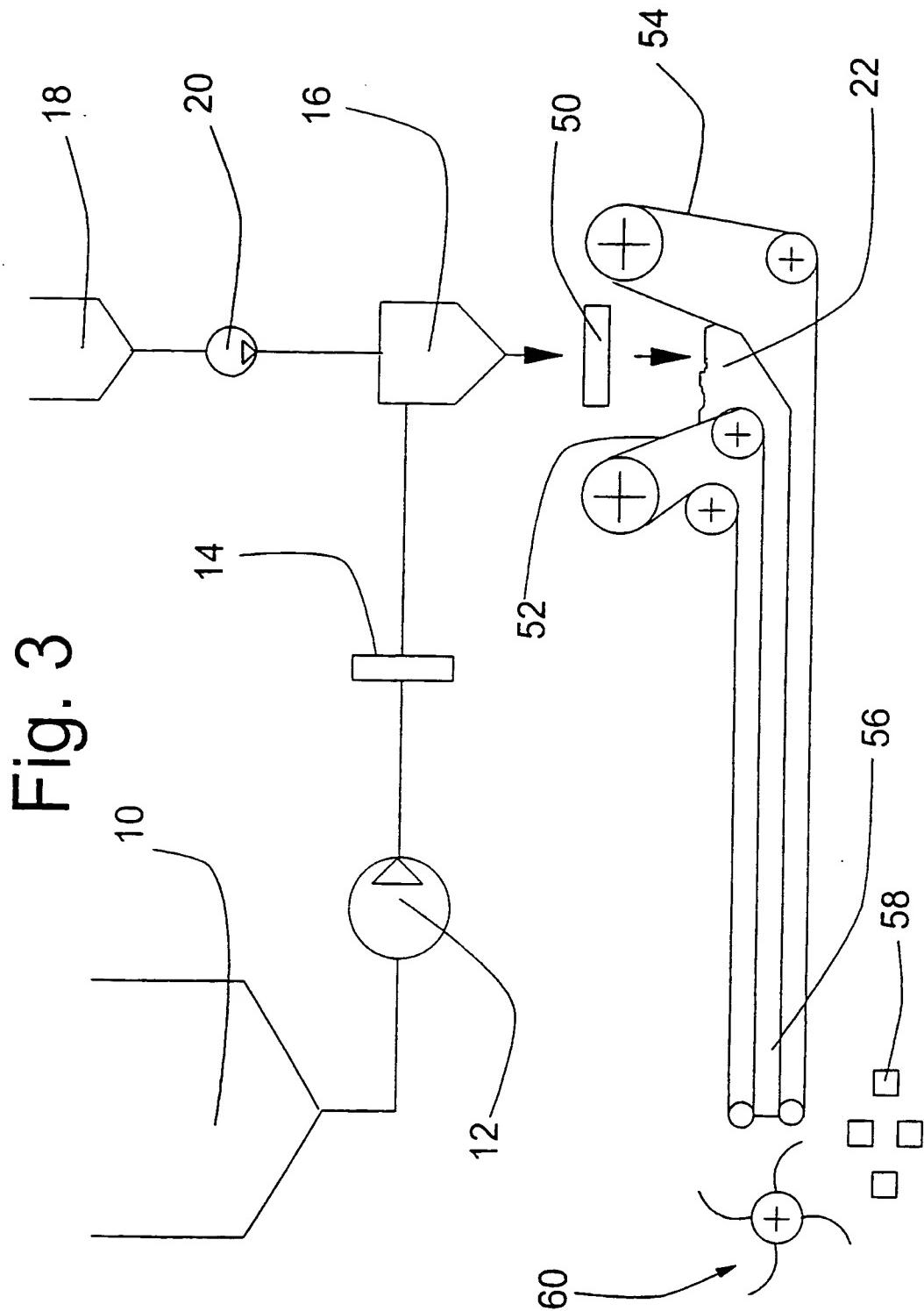
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 99/02106

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23J3/12 A23K1/04 A23J3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23J A23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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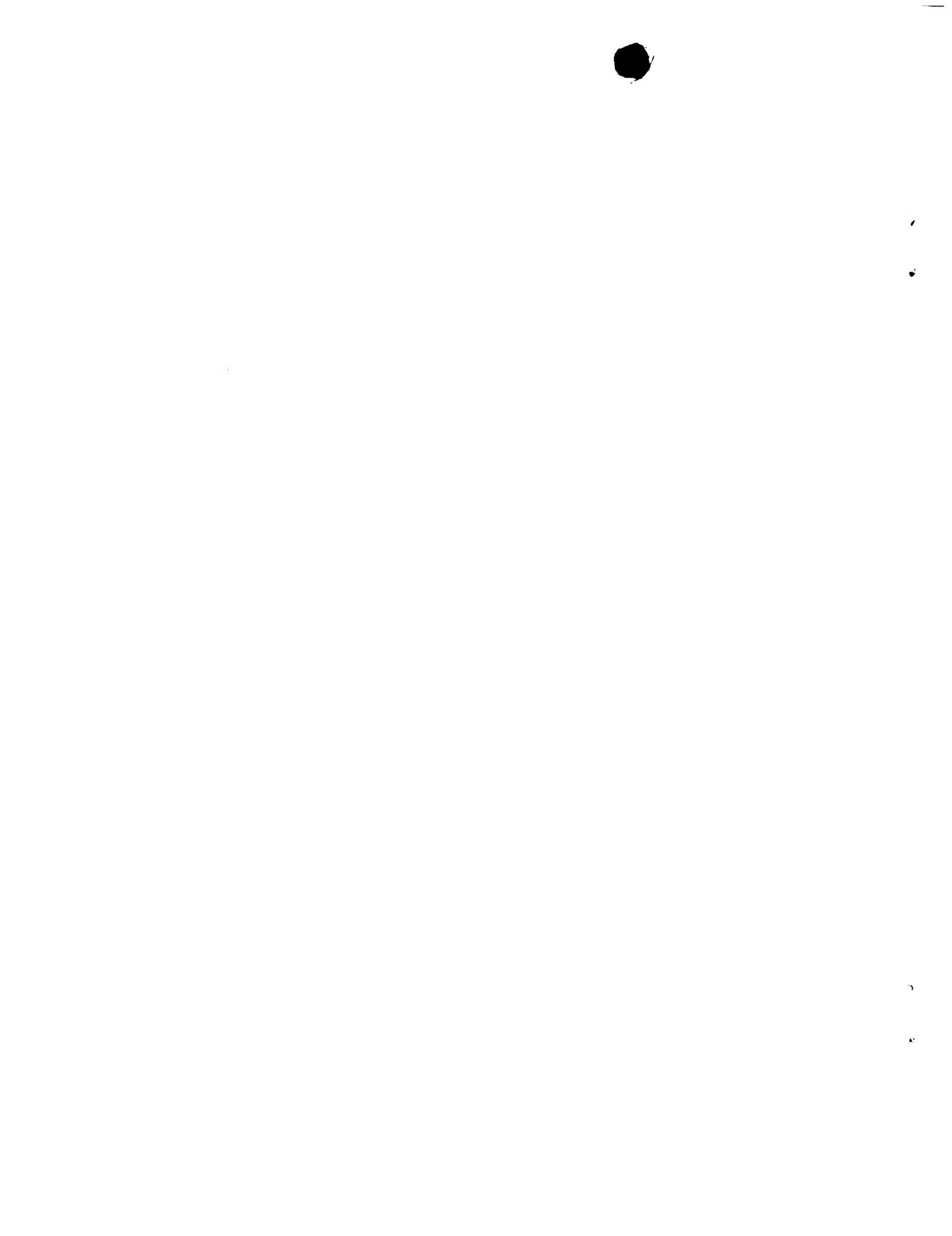
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Information on patent family members

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